

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Previously Presented) A method of generating a cyclical sound waveform corresponding to a sequence of substantially similar cycles, said method comprising:
- (a) generating a cyclical sound waveform sample;
 - (b) generating a successive cyclical sound waveform sample from said cyclical sound waveform sample and transformation data, wherein said transformation data comprise data defining the evolution of said cycles in a temporal vicinity of said cyclical sound waveform and the change in shape of said cycles in said temporal vicinity from cycle to cycle;
 - (c) designating said successive cyclical sound waveform sample as a cyclical sound waveform sample and repeating (b);
 - (d) repeating (c) a plurality of times to generate a sequence of said successive cyclical sound waveform samples corresponding to a plurality of said cycles; and
 - (e) outputting the samples of said sequence to generate a waveform representing a cyclical sound.

2. (Original) A method according to claim 1, in which said waveform comprises voiced speech.

3. (Previously Presented) A method according to claim 1 in which said transformation data does so by reference to a predetermined reference waveform sequence.

4. (Original) A method according to claim 3, in which said reference waveform sequence comprises a stored speech waveform.

6 5. (Previously Presented) A method according to claim 1, in which said steps (a) and (b) comprise generating a plurality of values representing said waveform sample values as a point in a multidimensional space in which corresponding portions of successive said cycles are substantially superposed.

6. (Previously Presented) A method according to claim 5 in which said transformation data does so by reference to a predetermined reference waveform sequence and in which said transformation data represents a transformation which approximates a transformation which would transform a first displacement vector, extending from a first time point on said reference waveform sequence to a corresponding time point on the waveform to be synthesised, to a second displacement vector extending from a second point, successive to the first, on said reference waveform sequence to a corresponding second point on the waveform to be synthesised.

7. (Previously Presented) A method according to claim 3, in which a given successive waveform sample is derived in accordance with data from a point on said reference waveform sequence at a position within a said cycle which corresponds to that of said given successive waveform sample, and at least one other point on said reference waveform sequence offset in time therefrom.

8. (Previously Presented) A method according to claim 1, in which said step (b) comprises calculating said transformation data from a set of stored waveform values.

6 9. (Previously Presented) A method according to claim 1, in which the initial performance of said step (a) to initial synthesis of said waveform comprises a step of selection of an initial value which differs from a previous initial value selected on a previous synthesis of said waveform.

10. (Original) A method according to claim 9 in which said selection step comprises applying a pseudo random number generation algorithm to select said value.

11. (Previously Presented) A method according to claim 9 in which said step of selection comprises referring to a stored waveform sample value and calculating a synthesised initial waveform value similar but different to said stored waveform value.

Claims 12-15 (Canceled).

16. (Original) A method of generating a synthetic voiced speech waveform, said method comprising:

6/ (a) storing data defining n-dimensional state space representations of voiced speech signals, n being an integer having a value of at least three, in which successive voiced speech pitch pulse cycles are superimposed to provide a model of voiced speech dynamics;

(b) selecting a synthesized waveform starting point in said n-dimensional state space representation for a predetermined voiced speech waveform that is offset from said stored data by an offset vector;

(c) selecting successive further synthesized waveform points in said n-dimensional state space representation for said predetermined voiced speech waveform that are also respectively offset from said stored data in dependence jointly upon the preceding point in the synthesized sequence, nearest other stored points in state sequence space and an offset vector therefrom;

(d) repeating (b) and (c) for plural voiced speech pitch cycles; and

(e) outputting the resulting sequence of thus synthesized waveform points to generate a voiced speech waveform.

17. (Original) A method of generating a synthetic voiced speech waveform, said method comprising:

(a) storing data defining n-dimensional state space representations of plural voiced speech waveform portions, n being an integer having a value of at least three, in which successive voiced speech pitch pulse cycles are superimposed in n-dimensional state space to provide a model of voiced speech dynamics;

6/ (b) generating synthesized waveform points using said n-dimensional state space representation for a predetermined voiced speech waveform portion,

(c) repeating (b) for plural successive different predetermined voiced speech waveform portions; and

(d) outputting the resulting sequence of thus synthesized waveform points to generate a voiced speech waveform.

18. (Previously Presented) Synthesis apparatus comprising:

(a) means for generating a cyclical sound waveform sample;

(b) means for generating a successive cyclical sound waveform sample from said cyclical sound waveform sample and transformation data, wherein said transformation data comprise data defining the evolution of said cycles in a temporal

vicinity of said cyclical sound waveform and the change in shape of said cycles in said temporal vicinity from cycle to cycle;

(c) means for designating said successive cyclical sound waveform sample as a cyclical sound waveform sample and repeating (b);

(d) means for repeating (c) a plurality of times to generate a sequence of said successive cyclical sound waveform samples corresponding to a plurality of said cycles; and

(e) means for outputting the samples of said sequence to generate a waveform representing a cyclical sound.

6/ 19. (New) A method of generating a cyclical sound waveform corresponding to a sequence of substantially similar cycles, said method comprising:

(a) generating a first instantaneous value of the amplitude of a cyclical sound waveform;

(b) generating a second instantaneous value of the amplitude of a cyclical sound waveform from said first instantaneous value and transformation data, wherein said transformation data comprise data defining the evolution of said cycles in the temporal vicinity of said cyclical sound waveform and the change in shape of said cycles in said temporal vicinity from cycle to cycle;

(c) designating said second instantaneous value as a first instantaneous value and repeating (b);

(d) repeating (c) a plurality of times to generate a sequence of said instantaneous values corresponding to a plurality of said cycles; and

(e) outputting the instantaneous values of said sequence to generate a waveform representing a cyclical sound.

20. (New) Synthesis apparatus comprising:

(a) means for generating a first instantaneous value of the amplitude of a cyclical sound waveform;

61 (b) generating a second instantaneous value of the amplitude of a cyclical sound waveform from said first instantaneous value and transformation data, wherein said transformation data comprise data defining the evolution of said cycles in the temporal vicinity of said cyclical sound waveform and the change in shape of said cycles in said temporal vicinity from cycle to cycle;

(c) designating said second instantaneous value as a first instantaneous value and repeating (b);

(d) means for repeating (c) a plurality of times to generate a sequence of said instantaneous values corresponding to a plurality of said cycles; and

(e) outputting the instantaneous values of said sequence to generate a waveform representing a cyclical sound.